# Year-End Review -2022: Ministry of Science & Technology Part-1

## Ministry of Science & Technology

- The Ministry of Science and Technology is charged with formulation and administration of the rules and regulations and laws relating to science and technology in India.

## MAJOR ACHIEVEMENTS OF DEPARTMENT OF SCIENCE AND TECHNOLOGY (DST) – 2022

### 1. Start-Up and Innovation Ecosystem

- **NIDHI Program -** NIDHI (National Initiative for Development and Harnessing Innovations) aims to nurture ideas and innovations into successful startups.
- **NIDHI-Entrepreneur in Residence (NIDHI-EIR) -** Encouraging graduates to take to entrepreneurship
- **Startup-NIDHI** - Encouraging students to promote start-ups
- **NIDHI-Technology Business Incubator(TBI) -** Converting innovations to start-ups
- **NIDHI-Accelerator** - Fast tracking a start-up through focused intervention
- **NIDHI-Seed Support System (NIDHI-SSS)** - Providing early stage investment
- **NIDHI Centres of Excellence (NIDHI-CoE)** - A world class facility to help startups go global

### 2. Technology Development in Cyber physical Domains

- **National Mission on Interdisciplinary Cyber Physical Systems -** The Union Cabinet approved the National Mission on Interdisciplinary Cyber Physical Systems (NM-ICPS) in 2018 for a period of 5 years.
- Cyber-Physical System (CPS) combines digital/ cyber elements with physical objects and data with capabilities of communication, data collection & processing, computing, decision making and action.
- The NM-ICPS is a comprehensive mission aimed at complete convergence with all stakeholders by establishing strong linkages between academia, industry, government and international organizations.
- **XraySetu** - An AI-driven platform called XraySetu was developed for Chest X-ray interpretation of images.
- **RAKSHAK** - A tapestry method for screening COVID-19 was developed under Remedial Action, Knowledge Skimming, and Holistic Analysis of COVID-19 (RAKSHAK).

## 3. International S&T Engagement

- The DST takes the responsibility of coordinating the activities of Science-20 (S20) and Research Innovation Initiative Gathering (RIIG) Engagement Groups during India's G20 Presidency in 2023.

## 4. Geospatial Data

- The **2nd United Nations World Geospatial Information Congress (UNWGIC)** on the theme "Geo-Enabling the Global Village: No one should be left behind" was held in Hyderabad.
- India was awarded to chair the new working group constituted for the **Integrated Geospatial Information Framework (IGIF).**
- Survey of India (SoI) has successfully carried out drone survey of rural abadi areas of 2,00,000+ villages as part of the SVAMITVA scheme.

**Survey of Villages and Mapping with Improvised Technology in Village Areas' (SVAMITVA) Scheme**

- It is a Central Sector Scheme of the Ministry of Panchayati Raj, which was launched on National Panchayati Raj Day, 24th April 2020.
- The scheme aims to provide the 'record of rights' to village household owners in rural areas and issue Property Cards.
- The Scheme is being implemented across the country in a phased manner over a period of four years (2020-2024).

## 5. Technology Commercialization

- A drone show with 1000 indigenized drones by women led company positioned India at 4th place on the globe.
- Gurugram based tech startup company has showed potential to reduce cost of purified water to as low as 25 paise per litre.
- A women led startup from Bengaluru has proposed an innovative wireless product to solve Internet connectivity issues of the rural India.

## 6. Scientific Infrastructure

- **PURSE scheme** - Under 'Promotion of University Research and Scientific Excellence (PURSE)' and 'Fund for Improvement of S&T Infrastructure (FIST)', many universities were provided substantive research grant to strengthen the research infrastructure.
- **SATHI** - Sophisticated Analytical & Technical Help Institute (SATHI) refers to a shared, professionally managed, S&T infrastructure facility, which can be readily be accessible to academia, start-ups, manufacturing units, industries and R&D Labs.
- **STUTI Scheme** - The 'Synergistic Training program Utilizing the Scientific and Technological Infrastructure' (STUTI) is intended to build human resource and its knowledge capacity through open access S&T Infrastructure across the country.

## 7. Tech-Led Solutions for Energy and Environment Challenges

- **Air Unique Quality Monitoring System (AUM)** has been developed which is capable of real time remote monitoring of all air quality parameters, with high sensitivity and accuracy simultaneously.
- A **coal to methanol plant** has been installed at BHEL-Hyderabad to demonstrate the generation of methanol from high ash coal.
- Methanol with purity of more than 99% has been generated from syngas.

## 8. Career Opportunities for Women Scientists

- **Vigyan Jyoti** - DST is encouraging meritorious girls to pursue higher education and career in underrepresented STEM (Science Technology Engineering Mathematics) fields.
- **Women Scientists Scheme-A (WOS-A) –** It aims to provide opportunities to women scientists and technologists between the age group of 27-60 years who desire to return to mainstream science and work as bench-level scientists.
- **CURIE Programme** - Under Consolidation of University Research through Innovation and Excellence in Women Universities (CURIE), only women Universities are supported for development of research infrastructure and creation of state-of-the-art research laboratories to enhance women's participation in S&T domain.
- **SERB-POWER** - It provides structured support in research to ensure equal access and weighted opportunities for Indian women scientists engaged in R&D activities.
- The R&D support to women scientists is provided through two components
    - SERB POWER Fellowships
    - SERB POWER Research Grants

## 9. Attracting the Talents to pursue their Career in Science

- **INSPIRE Scheme -** Innovation in Science Pursuit for Inspired Research (INSPIRE) aims to attract talent to study science at an early age and to help the country build the required critical resource pool.
- **Components of the scheme**

1. **Scheme for Early Attraction of Talent (SEATS) –** It aims to attract talented youth to study science by providing INSPIRE Award in the age group 10-15 years and also by arranging summer camps for about 50,000 science students of Class XI with global leaders.
2. **Scholarship for Higher Education (SHE)** - It aims to enhance rates of attachment of talented youth to undertake higher education in science intensive programmes, by providing scholarships and mentorship.
3. **Assured Opportunity for Research Careers (AORC)** – It aims to attract, attach, retain and nourish talented young scientific Human Resource for strengthening the R&D foundation and base.

    - It has two sub-components
        - INSPIRE Fellowship
        - INSPIRE Faculty Scheme

### 10. Conserving the Heritages through Digital Technologies

- **SHRI programme** – Under Science and Heritage Research Initiative (SHRI) programme, the sound proofing quality of Pattamadai mat, has been explored for use in noise guarding classrooms and recording studios.

### 11. Augmenting Research Capabilities

- **SERB-SURE** - State University Research Excellence (SERB-SURE) aims to create a robust R&D ecosystem in state universities and colleges including the private ones.

### 12. Policy Formulations

- **Scientific Research Infrastructure Sharing maintenance and Networks (SRIMAN) guidelines** – It aims to promote efficient utilisation and wider access of research infrastructure to scientists, researchers and industry professionals.
- **Scientific Social Responsibility (SSR) Guidelines** - SSR is based on the moral and ethical obligation of the scientific community to give back the benefits they derive from science to the society.
- **Science, Technology and Innovation (STI) Policy** - The new policy revolves around the core principles of being decentralized, evidence-informed, bottom-up, experts-driven, and inclusive.
- **National Geospatial Policy –** It is a citizen-centric policy that liberalizes the geospatial sector and democratizes the datasets generated by use of public funds.

## MAJOR ACHIEVEMENTS DURING THE LAST 9 YEARS

## POLICY LEVEL IMPACTS

- India is now placed at **40th** position among the top innovative economies globally as per **Global Innovation Index (GII) 2022**.
- The country remains among the **top 3** countries in
    - scientific publication as per NSF database
    - in terms of no of PhDs
    - in size of Higher Education System
    - in terms of number of Start-ups
    - in terms of most attractive investment destinations for technology transactions
- India is ranked **9th** in terms of resident patent filing.
- The Gross Expenditure on R&D has increased more than three times in the last 10 years.
- Women's participation in extramural R&D has also doubled in the last 9 years.

**Global Innovation Index (GII) 2022**

- The Global Innovation Index (GII) was published by World Intellectual Property Organization (WIPO), in partnership with the Portulans Institute.

- It ranks the countries based on their innovation capabilities, including roughly 80 indicators, grouped into innovation inputs and innovation outputs.
- Switzerland is the most innovative economy in the world in 2022 - for the 12th year in a row - followed by the US, Sweden, the UK and the Netherlands.
- India is the innovation leader in the lower middle-income group. It continues to lead the world in ICT services exports.

To know about Part-2, click here

**References**


1. PIB | Year-End Review -2022: DST
2. PIB | Achievements in the past 9 years


